IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION

BROWN INNOVATIONS, INC.,	§	
	§	
Plaintiff,	§	CIVIL ACTION
vs.	§	
	§	
PEREGRINE SOUTHWEST REPS, INC. and SOUNDTUBE ENTERTAINMENT, INC.,	§	NO.: H-01-1090
	§	
Defendants.	§	

PLAINTIFF'S FIRST AMENDED COMPLAINT

Plaintiff Brown Innovations, Inc. ("Brown") files this its first amended complaint for patent infringement, injunctive relief and damages against defendants herein, Peregrine Southwest Reps, Inc. ("Peregrine") and SoundTube Entertainment, Inc. ("SoundTube") and for unfair competition as to defendant SoundTube.

I.

This action arises under the laws of the United States relating to patents (Title 35, United States Code, §§271 and 281-287), to claims of unfair competition under the Lanham Act (Title 15, United States Code, §1125(a)), and to claims of unfair competition at common law joined to a substantial and related claim under the patent laws (Title 28, United States Code, §1338(b)) and under the doctrine of pendent jurisdiction. This Court has jurisdiction pursuant to §1338(a) of Title 28, United States Code, this being an action relating to patents,

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and pursuant to §1338(b) as aforestated. Venue is proper in this District under 28 United States Code §1391(b) and (c), and under 28 United States Code §1400(b).

II.

Plaintiff Brown Innovations, Inc. is a Massachussetts corporation not authorized to do nor doing business within the state of Texas, and is the owner by assignment of all right, title and interest in the patent in suit, United States Letters Patent No. 5,532,438.

III.

Defendant Peregrine Southwest Reps, Inc. is a Texas corporation with a regular and established place of business situated within this district and upon which service of process has been previously effected. Defendant SoundTube Entertainment, Inc. is a Utah corporation not registered to do but doing business within this district and residing within this district pursuant to 28 U.S.C. §1391(c), who may be lawfully served with process, pursuant to §17.044 of the Texas Civil Practices & Remedies Code, by serving the Secretary of State of the State of Texas, Post Office Box 12887, Capital Station, Austin, Texas 78711, and forwarding such service to said defendant at its home office address:

SoundTube Entertainment, Inc.
6430 North Business Park Loop
Park City, Utah 84098

Count I for Patent Infringement

IV.

United States Letters Patent No. 5,532,438 (the "patent" or the '438 patent) duly and legally issued on 2 July 1996 to Kevin Brown for a revolutionary invention entitled "Acoustic Imaging Dome". A true copy of this patent is attached hereto as Exhibit 1 and made a part hereof as though fully set out verbatim herein. Plaintiff Brown Innovations, Inc., as the owner by assignment of the entire right, title and interest in and to said patent, has standing to sue for infringement and has the right to sue for and collect damages for past infringement at all times relevant hereto.

V.

Plaintiff Brown Innovations, Inc. is a small, closely-held corporation having as its president Kevin Brown, the inventor of the inventions disclosed and claimed in the patent in suit. The corporation was formed in 1991 to develop new technology while Mr. Brown was completing his Ph.D. studies at the Massachussetts Institute of Technology. Subsequent to conception of the invention in suit, the company decided to concentrate on developing and marketing the now patented product. Today, this product, along with its related accessories such as speaker systems, dome supports and the like, accounts for virtually all the company's revenues.

VI.

The patented technology represents a significant advancement over the prior art, which in general tended to utilize the well-known properties of parabolic-shaped acoustic reflectors. It has long been known that sound (or light)

emanating from a source at the focal point of a parabola would leave it in parallel "lines", so to speak, of uniform intensity. Dr. Brown realized that what was really needed from acoustic reflecting domes was not the uniform, non-concentrated form of waves produced by parabolas but a more highly focused wave form than could be obtained from a parabola - a "smaller listening area", so to speak. Dr. Brown discovered that he could advantageously produce this more concentrated focus with a reflecting surface substantially spherical in shape, and with a sound source positioned either on or away from the spherical axis, which would permit significant operational advantages. He further discovered that with two sound sources located off-axis he could produce true stereophonic sound at the ears of a listener standing in the proper place under the dome. Thus a listener could simply walk under such a dome and, without the encumbrance or bother of headphones, clearly hear either monaural or stereophonic recordings, without disturbing another person just a few feet away. Such technology is useful not only in music stores but wherever such free area, non-disturbing recorded presentations may be desired, such as other types of retail stores, museums, trade show booths and the like.

VII.

SoundTube Entertainment, on information and belief, was formed by a David Wiener, its president. For some time now Mr. Wiener has had SoundTube imitate Brown Innovations' patented products, and manufacture and sell infringing products and distribute them through a network of distributors and dealers. At least the products marketed and sold under the designations DPS20, FPS20, FPS30 and FP633 infringe at least claim 8 of the patent in suit. Such products typically have a spherical top section of slightly smaller radius, offset or "stepped" from a lower spherical section of slightly larger radius. For example, plaintiff's 20-inch model has, of course, a 10-inch radius; SoundTube's

copy, the DPS20, illustrated in Exhibit 2 attached hereto, has a top spherical section with a radius of approximately 9 inches, "stepped" out to a lower spherical section of approximately 10 inches radius. Each such spherical section has a constant radius within plus or minus 1/16th of an inch, which is, of course, well within manufacturing tolerances for spherical domes.

VIII.

SoundTube has thus infringed at least claim 8 of the patent in suit by making or having made such products, as aforesaid; by using such products, and by having used them within Texas and within this district; by offering to sell such products, and within Texas and within this district; by selling such infringing products, and within Texas and within this district, and to defendant Peregrine; and by inducing others to infringe such patent, and within Texas and within this district. Defendant Peregrine has in turn infringed the patent in suit at least by selling and offering to sell the infringing products within Texas and within this District. Peregrine may be the exclusive distributor for SoundTube for the territory of Texas, and for other territory as well.

IX.

Since the issuance of the '438 patent, plaintiff has developed and marketed a number of different models of acoustic imaging domes, all of which have had the patent number of the patent in suit plainly visible. In addition, both defendants have actual notice of the patent but continue to infringe. Such infringement is not only without leave or license of plaintiff but is wilful and deliberate, and will continue until enjoined by this Court.

Count II for Unfair Competition Under The Lanham Act and at Common Law

X.

Plaintiff hereby incorporates herein the allegations of the preceding paragraphs I through IX by specific reference thereto, with the same force and effect as if repeated verbatim herein.

XI.

Section 1125(a) of the Lanham Act (Title 15, United States Code) provides, in pertinent part, that any person who, in connection with any goods or services, uses in commerce any false or misleading description of fact, or false or misleading representation of fact, which, in commercial promotion, misrepresents the nature, characteristics, qualities or geographic origin of his or another person's goods, services or commercial activities, *shall be* liable in a civil action by any person who believes he is or is likley to be damaged by such act.

XII.

SoundTube has both violated the foregoing section of the Lanham Act and competed unfairly at common law by representing to customers and to prospective customers that SoundTube's products were "the same as" plaintiff's products and that their performance was "as good as" plaintiff's, even when SoundTube had knowledge to the contrary. Further, SoundTube has, on multiple occasions, distributed, in commercial promotion, "comparison sheets," purportedly of the performance of the antagonists' respective products, purporting to demonstrate that the performance of SoundTube's copy was *identical* to that of plaintiff's, at each and every point of measurement. Such a result, of course, is a technical impossibility, unless the accused product is an exact reproduction of the patented product.

Wherefore, plaintiff prays for a perpetual injunction, after trial on the merits, prohibiting further infringement of the valid claims of United States Letters Patent No. 5,532,438; an accounting to determine each defendant's profits and plaintiff's lost profits, and plaintiff's other damages resulting from each defendant's infringement, and an award of an amount sufficient to compensate plaintiff for said infringement, and pre- and post-judgment interest thereon; a trebling of the damages caused by each defendant's infringement because of the wilful and deliberate nature of the infringement, and an award of such sum to plaintiff; an award of costs, disbursements, and of plaintiff's reasonable attorney's fees; and, as to defendant SoundTube, judgment that such defendant has competed unfairly and an award of the damages caused to plaintiff thereby; and such other and further relief as to which this Court may find plaintiff herein entitled.

Respectfully submitted,

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Dated: 26 Feb. 2002

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US005532438A

United States Patent [19]

Brown

[11] Patent Number: 5,532,438

[45] Date of Patent: Jul. 2, 1996

[54] ACOUSTIC IMAGING SOUND DOME

[76] Inventor: **Kevin Brown**, 341 Marlboro St., #2, Boston, Mass. 02115

[21] Appl. No.: **147,026**

[22] Filed: **Nov. 4, 1993**

[51] **Int. Cl.**[6] **E04B 1/99**

[52] **U.S. Cl.** **181/155**; 181/30

[58] **Field of Search** 181/144, 155, 181/176, 30; 381/17, 64, 160

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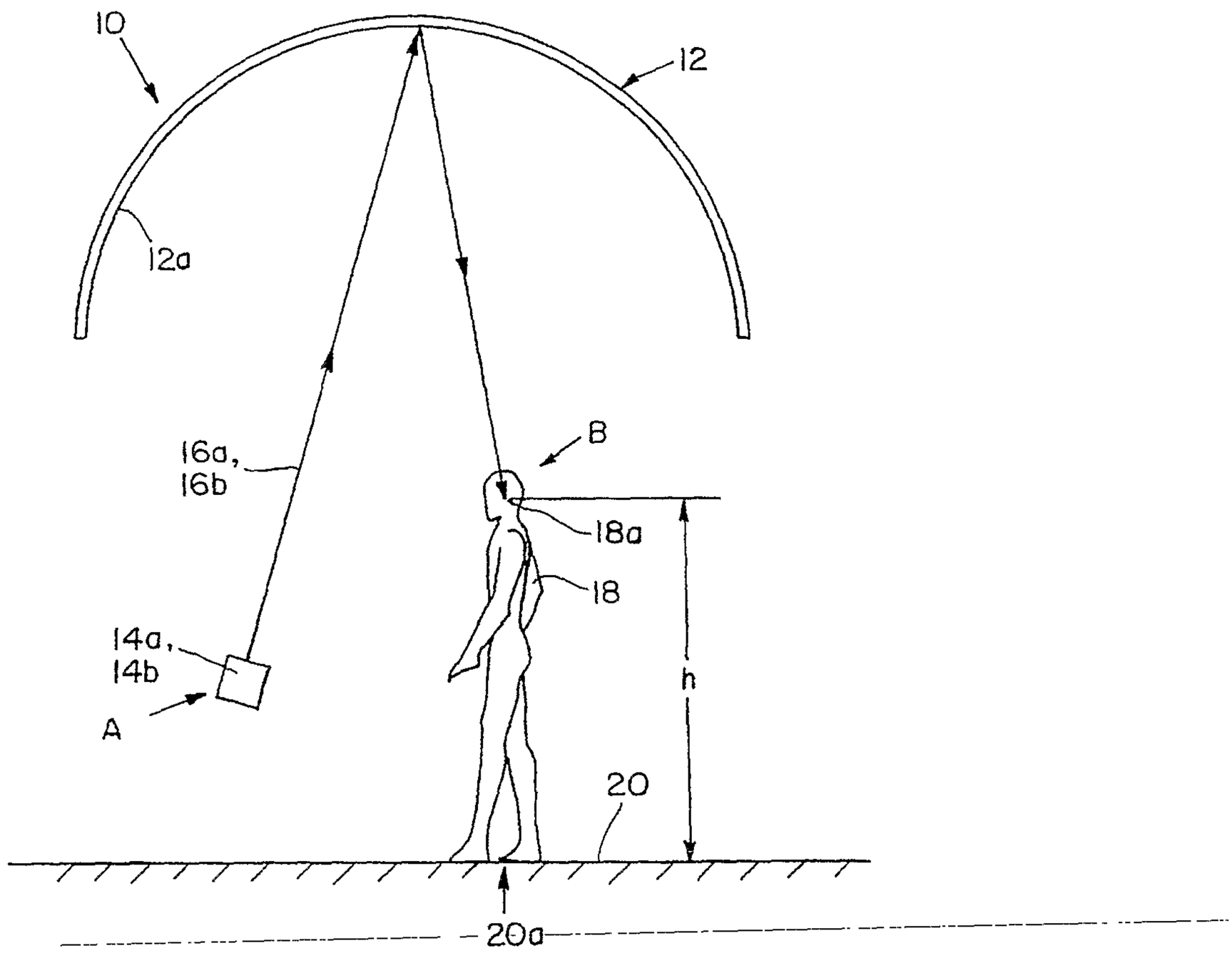
Primary Examiner—Khanh Dang

Attorney, Agent, or Firm—Hamilton, Brook, Smith & Reynolds

[57] **ABSTRACT**

An acoustic imaging sound apparatus includes an acoustically reflective dome for reflecting and focusing stereophonic sound waves from stereo speakers directed into the interior of the dome. The stereophonic sound waves are focused by the dome to a listening area to provide a listener with pure stereophonic sound.

20 Claims, 4 Drawing Sheets



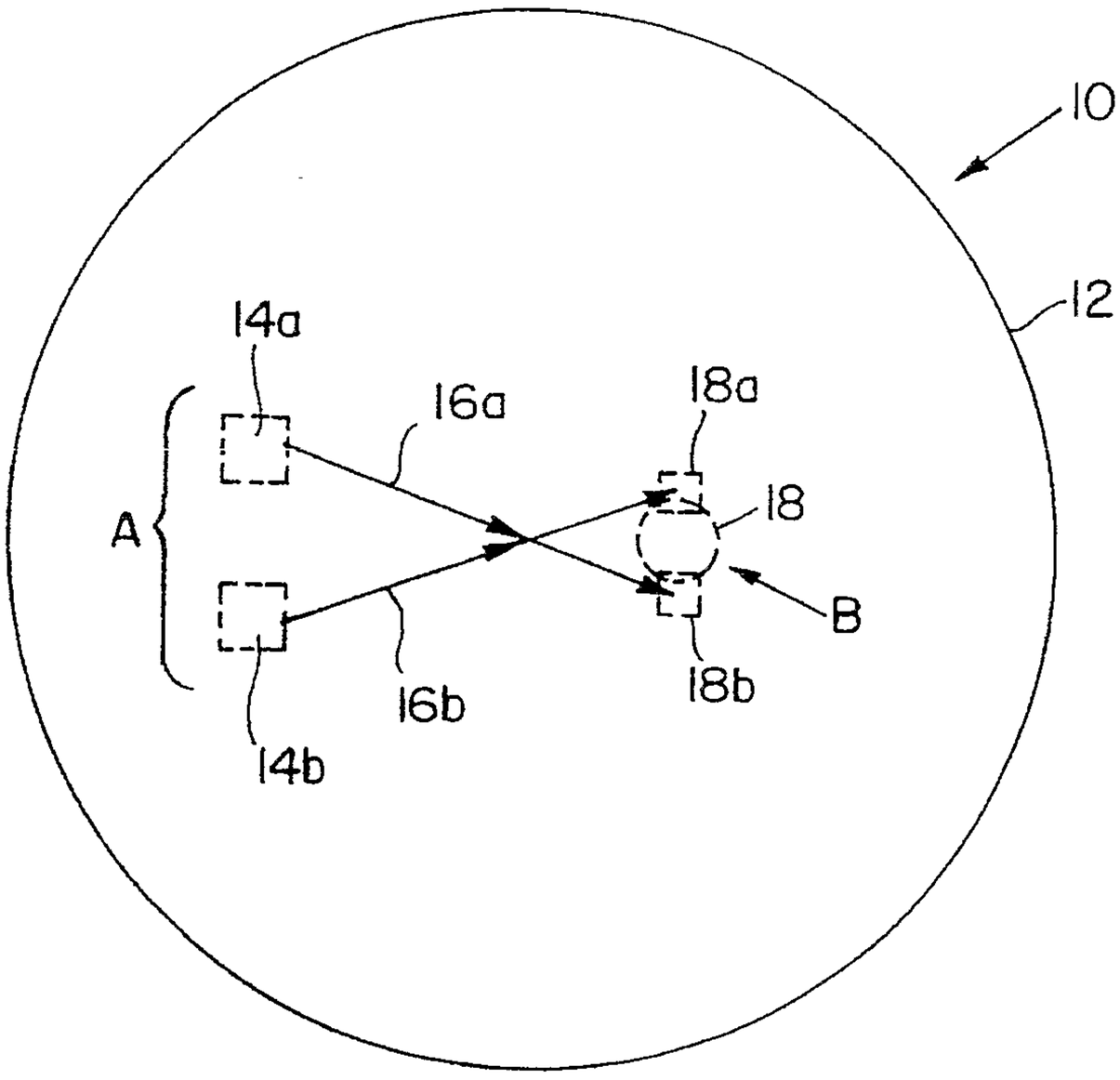


FIG. 1

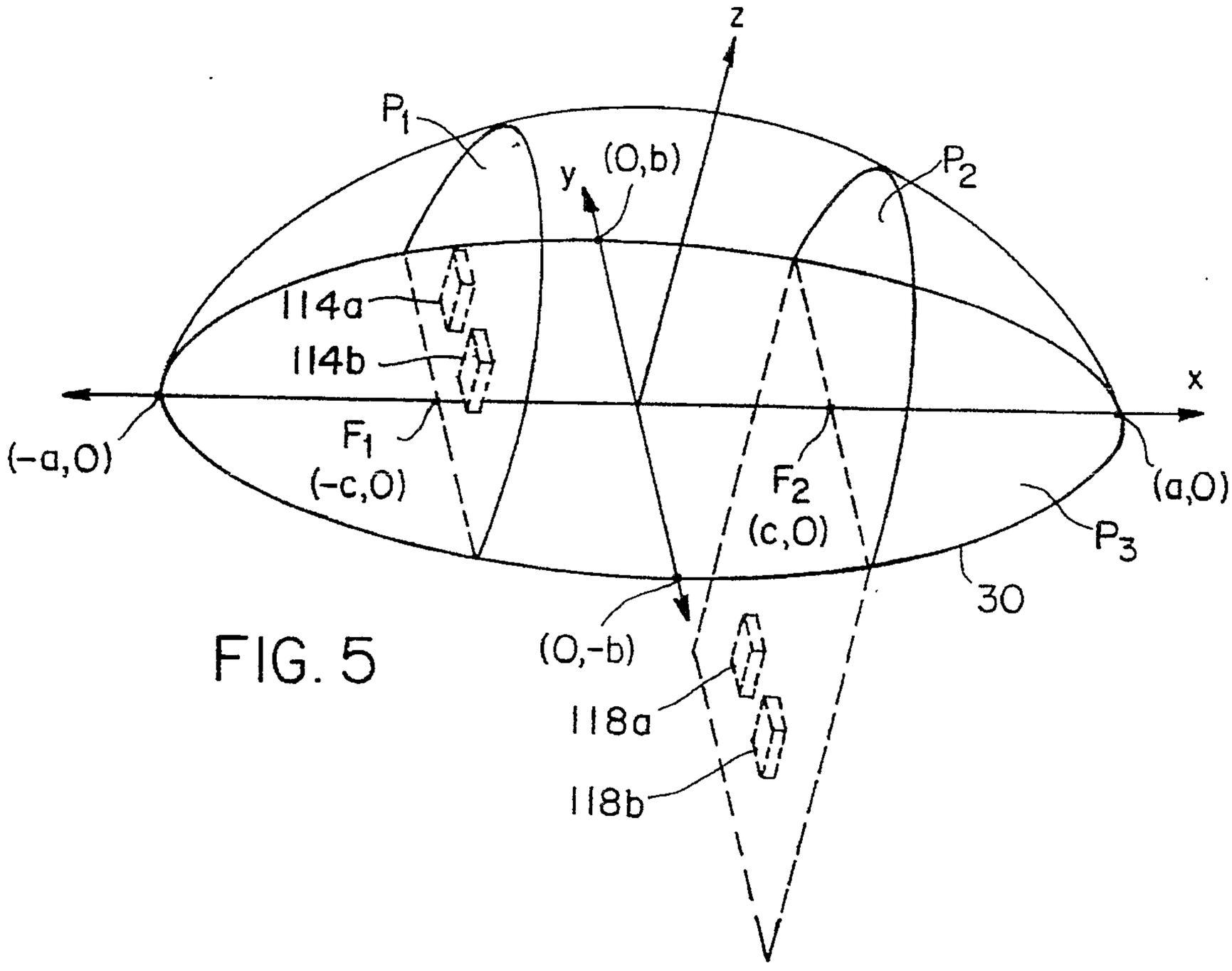


FIG. 5

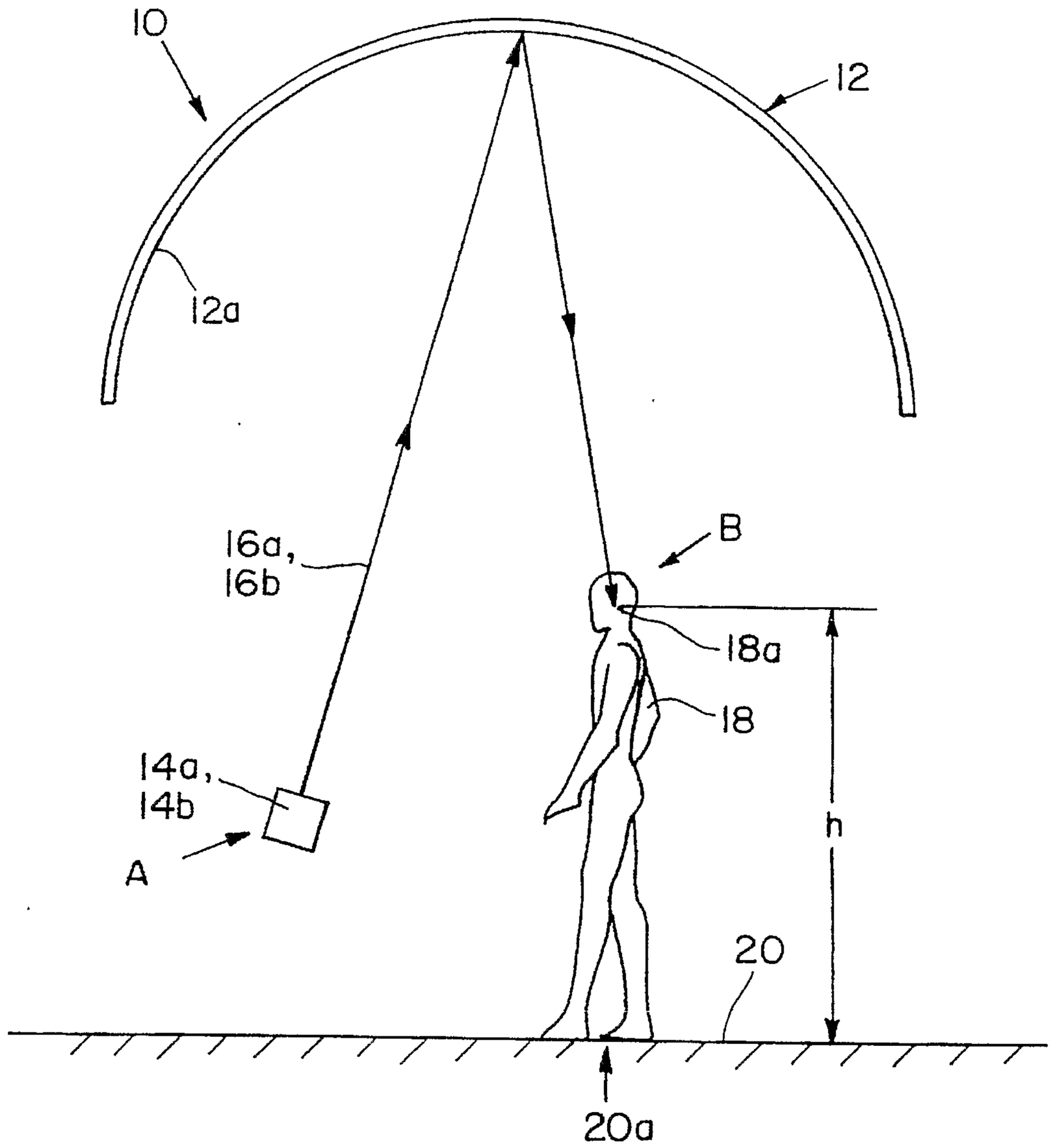


FIG. 2

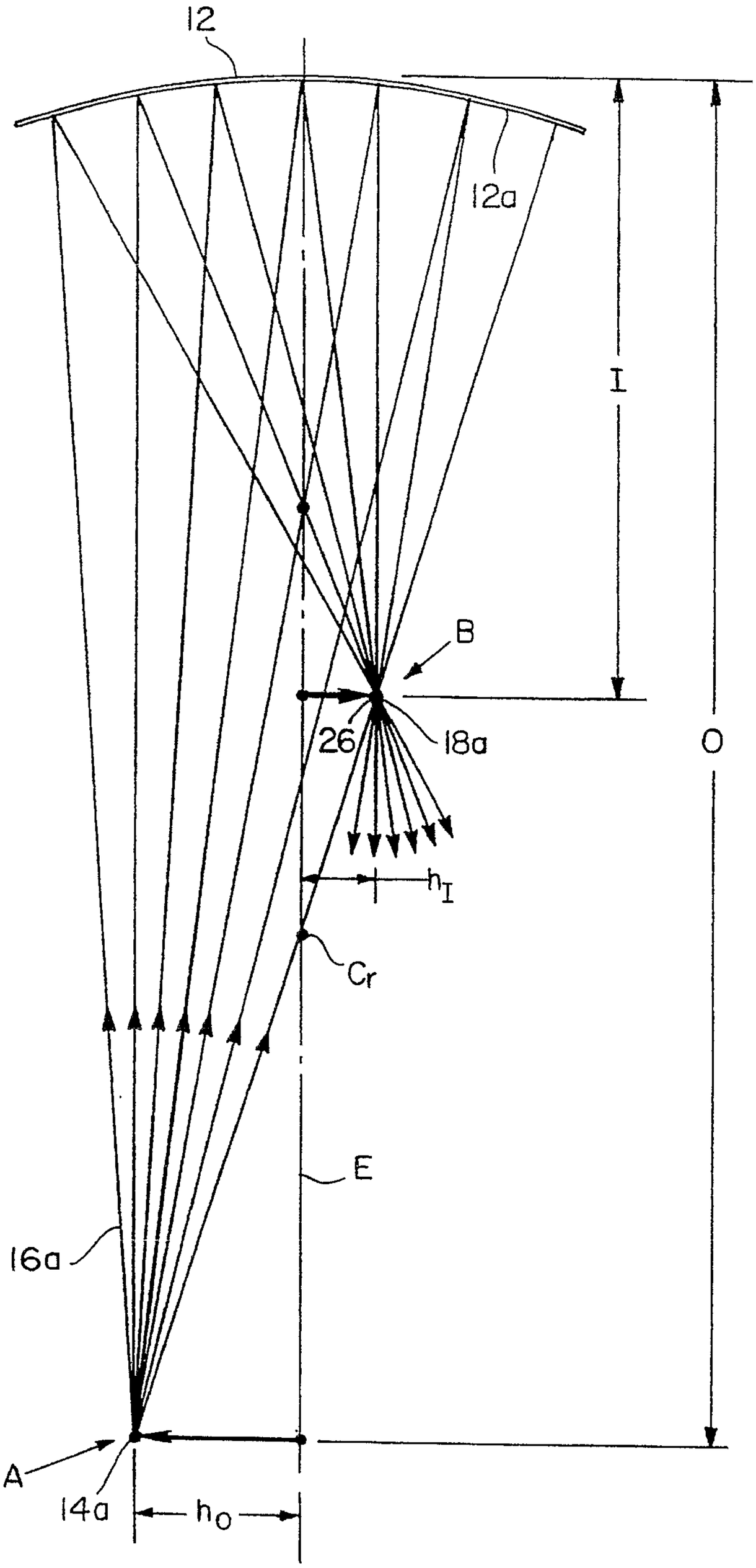


FIG. 3

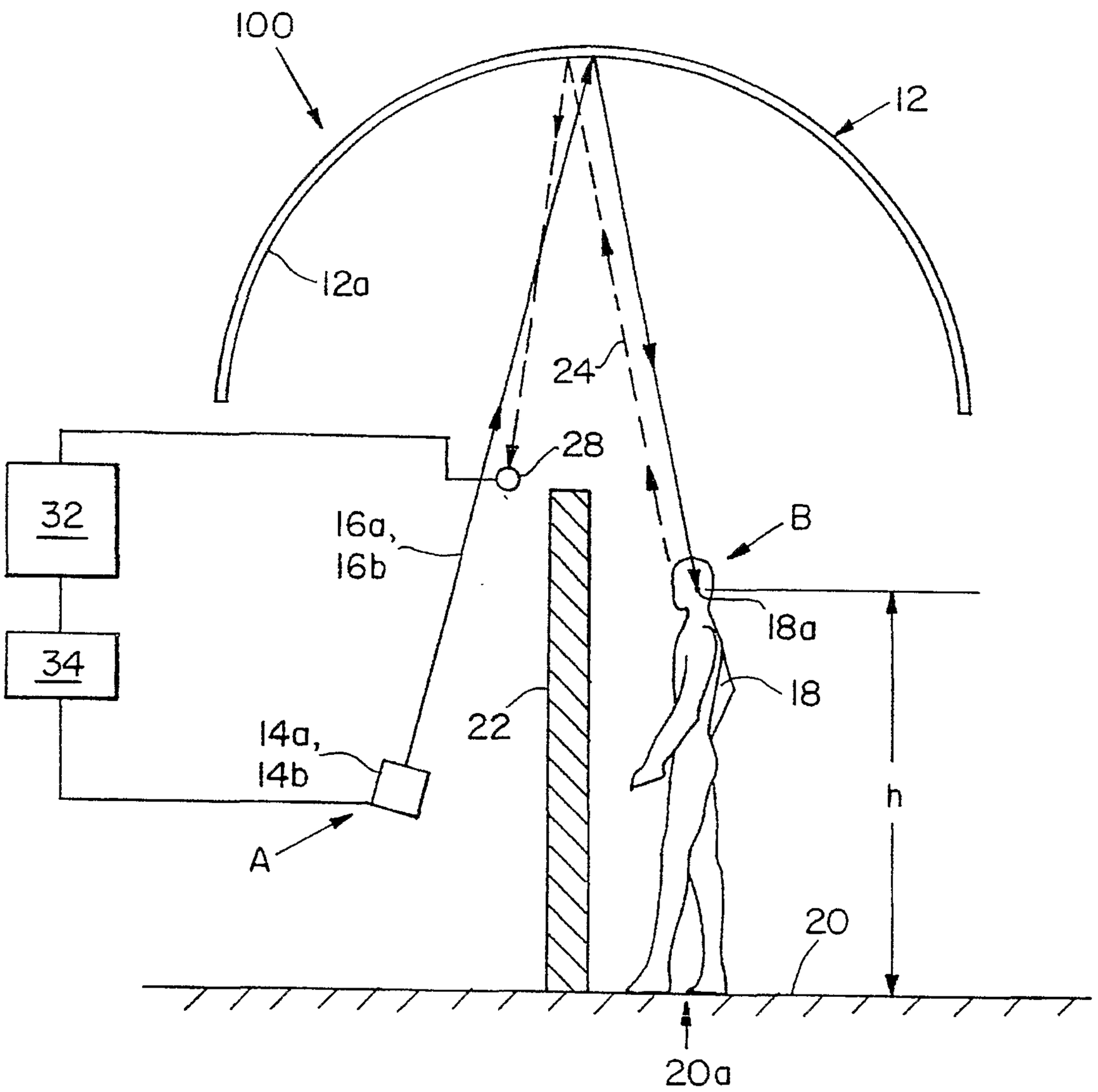


FIG. 4

ACOUSTIC IMAGING SOUND DOME

BACKGROUND

Electro-acoustic speakers are used to generate sound, such as music or voice to a listener or listeners. Often, it is desirable for only a single person or a limited number of people to be capable of hearing a sound source so that others in nearby areas are not disturbed. This is useful if separate audiences located near each other are listening to more than one sound source such as when evaluating musical recordings for purchase in a music store, or listening to a display at a museum.

A common solution to this problem is to provide a single listener with headphones or multiple listeners with a listening booth. Headphones provide an isolated acoustic environment in which one can privately listen to a pure stereo sound source. Pure stereo sound provides sound from a right channel to the right ear and sound from a left channel to the left ear. A drawback with headphones is that the listener is inconvenienced with having to wear a headphone set.

Listening booths are typically an isolated room with stereo speakers which provides an isolated listening environment for one or more listeners. The drawback of listening booths is that the listening booth is completely isolated from surrounding regions by the walls of the listening booth. Additionally, the sound heard from stereo speakers in a listening booth is not pure stereo. Sound from both the right and left speakers or channels is heard by both the right and left ears.

SUMMARY OF THE INVENTION

Accordingly, there is a need for an apparatus for providing pure stereo sound to a listener without the inconvenience of wearing a headphone set, without disturbing people in the vicinity and without completely isolating the listening region from surrounding regions with walls.

The present invention provides an apparatus for focusing acoustic sound waves to a listener including an acoustically reflective dome having an interior surface for focusing acoustic sound waves. An acoustic sound wave generator is positioned in a first location with respect to the dome for producing acoustic sound waves. The sound waves are reflected off the interior surface of the dome and focused at a predetermined second location with respect to the dome for listening.

In preferred embodiments, the interior surface of the dome is substantially spherical in shape. The sound wave generator includes first and second speakers positioned side-by-side for producing stereophonic sound waves. The sound waves produced by the sound wave generator are equalized to boost the low frequency sound waves and reduce the high frequency waves in relation to the mid-range frequency sound waves. Optionally, a microphone can be positioned for receiving acoustic sound waves produced by the listener at the second location which are focused by the dome on the microphone. The microphone is helpful in voice-activated interactive applications where listener participation is required.

In another preferred embodiment of the present invention, the dome is substantially ellipsoidal in shape. A dome of such a shape is useful when a large dome with a shallow depth is desired.

The present invention apparatus provides isolated pure stereophonic sound to a listener without the inconvenience

of wearing headphones and without completely isolating the listening region from surrounding regions with walls.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and other objects, features and advantages of the invention will be apparent from the following more particular description of preferred embodiments of the drawings in which like reference characters refer to the same parts throughout the different views. The drawings are not necessarily to scale, emphasis instead being placed upon illustrating the principles of the invention.

FIG. **1** is a top view of the present invention acoustic imaging sound dome.

FIG. **2** is a side view of the present invention acoustic imaging sound dome.

FIG. **3** is a graphical representation of a sound image at a first location focused by the acoustic imaging dome to a second location.

FIG. **4** is a side view of another preferred embodiment of the present invention acoustic imaging sound dome.

FIG. **5** is a perspective view of another preferred embodiment of the present invention dome.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In FIGS. **1** and **2**, the present invention acoustic imaging sound dome apparatus **10** includes a spherical dome **12** made of acoustically reflective material which is positioned above a listener **18**. By spherical dome, it is meant that the interior surface of the dome is spherical in curvature and does not mean that the dome itself has to be a complete sphere. A first speaker **14***a* and a second speaker **14***b* for producing sound are positioned at location "A". The first speaker **14***a* produces a first sound channel **16***a* and the second speaker **14***b* produces a second sound channel **16***b*. The first speaker **14***a* and the second speaker **14***b* direct the first and second sound channels **16***a* and **16***b* respectively into dome **12**. Sound channels **16***a* and **16***b* are reflected by the interior surface **12***a* of dome **12** and focused on a listening area generally indicated at B. The sound channels cross each other before reaching listening area B. A listener **18** who wishes to listen to the stereophonic sound produced by speakers **14***a* and **14***b*, stands or sits at a designated location **20***a* which can consist of marks painted on floor **20**. This positions the listener's **18** ears approximately in the region of listening area B. In the preferred embodiment, the height h at which listening area B is located is approximately 5'3" in height. This ensures that the majority of average height listeners will have their ears located approximately in the region of listening area B. The sound channel **16***a* produced by speaker **14***a* is focused by dome **12** at location **18***b* in the region about the left ear of listener **18**. The sound channel **16***b* produced by speaker **14***b* is focused by dome **12** at location **18***a* in the region about the right ear of listener **18**. As a result, since each ear hears sound produced by a different channel, pure stereophonic sound is heard by listener **18**.

The sound frequencies which are reflected by dome **12** are generally between 500 hertz to 20,000 hertz. In most private listening applications, a 2½ foot to 5 foot diameter dome is suitable. However, larger diameters are possible. In the preferred embodiment, the dome **12** is made of rigid material secured to a frame with the interior surface of the dome coated with a plaster and fiberglass composite. However,

alternatively, dome **12** can be made of any suitable uncoated rigid material such as cardboard, wood, metal or plastic. In addition, although dome **12** is shown as a full hemisphere, dome **12** can be less than a hemisphere.

Each speaker **14***a* and **14***b* produces a full range of audible frequencies from the same region in order for the sound for each channel **16***a* and **16***b* to be focused at a point. As a result, speakers having woofers and tweeters are not adequate speaker sources in this application because the woofer and tweeter are side-by-side. As a result, the sound from a woofer and tweeter would be focused side-by-side instead of at a single point. Since the sound from speakers **14***a* and **14***b* is focused, the high frequency sounds when heard at the listening area B have an increased intensity. The sound from speakers **14***a* and **14***b*, therefore, can be equalized in which the intensity of the bass or low frequency sound waves are boosted and the intensity of the high frequency sound waves reduced relative to the mid frequencies to balance the focused high frequencies.

Since the sound produced by speakers **14***a* and **14***b* is focused at points in space, the output of speakers **14***a* and **14***b* can be small compared to a conventional speaker placed in a room. When the listener's **18** ears are positioned within the region of listening area B, the ambient noise will be much less intense relative to the focused sound with only a moderate amount of structural isolation. Additionally, by carpeting the floor **20**, further acoustic isolation is provided.

FIG. **3** depicts how sound produced by speaker **14***a* is reflected and focused. Although FIG. **3** depicts only how sound produced by speaker **14***a* is reflected and focused, the sound from speaker **14***b* is reflected and focused in the same manner. Dome **12** reflects and focuses sound waves in a manner that is similar to the way in which an optical spherical mirror focuses light. A sound channel **16***a* generated by a speaker **14***a* at location A is directed into dome **12** and reflected by the inner surface **12***a*. The sound from speaker **14***a* is focused on location **18***a* at listening area B to produce a focused sound image **26**.

The vertical distances between the apex of dome **12** and focused sound image **26** or speaker **14***a* can be determined by the equation:

$$\frac{1}{O}+\frac{1}{I}=\frac{2}{r} \qquad \text{(Eq. 1)}$$

where:

O=the distance between speaker **14***a* and the apex of dome **12**,

I=the distance between focused sound image **26** and the apex of dome **12**, and

r=the radius of curvature of dome **12** having C_r as the center.

The horizontal distances between the vertical axis "E" and the focused sound image **26** or speaker **14***a* can be determined by the equation:

$$\frac{O}{I}=\frac{h_o}{h_I} \qquad \text{(Eq. 2)}$$

where:

h_o=the horizontal offset distance between speaker **14***a* and vertical axis "E", and

h_I=the horizontal offset distance between focused sound image **26** and vertical axis "E",

The size of the area occupied by focused sound image **26** is determined by the equation:

$$\frac{O}{I}=\sqrt{\frac{A_o}{A_I}} \qquad \text{(Eq. 3)}$$

where:

A_o=the area of speaker **14***a*, and

A_I=the area occupied by focused sound image **26**.

In FIG. **4**, apparatus **100** is another preferred embodiment of the present invention in which a wall **22** is erected between the listener **18** and speakers **14***a* and **14***b*. Wall **22** is employed to hide the speakers from sight. The sound channels **16***a* and **16***b* generated by speakers **14***a* and **14***b* respectively travel above the wall **22**. Sound channels **16***a* and **16***b* are reflected and focused by dome **12** over wall **22** to listening area B. A microphone **28** is positioned to receive the focused sound waves **24** reflected by dome **12** from words spoken by listener **18** for voice-activated interactive applications. In order for microphone **28** to receive the sound waves **24** from listener **18**, listener **18** must stand at designated location **20***a* which places his/her head within listening area B. Microphone **28** is connected to a computer **32** which receives and processes the signals conveyed by microphone **28**. Computer **32** can be operated by words spoken by listener **18** to control the sound generated by speakers **14***a* and **14***b*. A recorded music player **34** such as a turntable, tape player or compact disc player can be coupled to computer **32**. Additionally, other walls may be erected to partially or fully enclose listening post B to provide further acoustic isolation.

In other applications, dome **12** can be used for speaking and listening to a person over the telephone. Dome **12** can also focus the audio portion of a television program to a viewer watching television so that people nearby are not disturbed. Additionally, apparatus **100** can have multiple speaker locations and corresponding listening areas. Furthermore, although two speakers are shown for producing stereophonic sound, a single speaker can be employed to provide monotone sound.

FIG. **5** depicts a dome **30** which can be substituted for dome **12**. By specifying an ellipsoidal dome, it is meant that the interior surface of the dome is ellipsoidal in curvature and does not mean that the dome itself has to be a complete ellipsoid. Dome **30** is ellipsoidal in shape. An ellipsoidal dome **30** is useful in applications where a large dome with a shallow depth is desired.

Dome **30** has two focii F_1 and F_2 located near respective ends of dome **30** along the elliptical x-y plane P_3. The equation of an ellipse with focii F_1 and F_2 located at F_1=(−c,O) and F_2=(c,O) is:

$$\frac{X^2}{a^2}+\frac{Y^2}{b^2}=1 \qquad \text{(Eq. 4)}$$

where:

a=the semimajor axis

b=the semiminor axis, and

$a^2=b^2+c^2$

In use, speakers **114***a* and **114***b* are positioned within dome **30** along the y-z plane P_1 which passes through foci F_1. The sound produced by speakers **114***a* and **114***b* is reflected by dome **30** and focused at locations **118***a* and **118***b* located outside dome **30** on the y-z plane P_2 passing through foci F_2. The sound produced by speaker **114***a* is focused at location **118***b*, which crosses the sound produced by speaker **114***b* focused at location **118***a*. The sound images focused on locations **118***a* and **118***b* are the same as the source. Locations **118***a* and **118***b* are located an equal distance away from the x axis as speakers **114***a* and **114***b* but on the opposite side.

EQUIVALENTS

While this invention has been particularly shown and described with references to preferred embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be therein without departing from the spirit and scope of the invention as defined by the dependent claims.

What is claimed is:

1. An apparatus for focusing sound waves to a listener comprising:

an acoustically reflective dome having an interior surface for focusing sound waves, the interior surface of the dome being spherical in shape with a constant radius; and

a sound wave generator positioned in a first location with respect to the dome for producing sound waves, the sound waves reflecting off the interior surface of the dome and focusing at a predetermined second location with respect to the dome for listening, whereby the location at which the sound waves are focused can be varied by varying the location at which the sound waves are produced.

2. The apparatus of claim **1** in which the sound wave generator comprises first and second speakers positioned side-by-side for producing stereophonic sound waves.

3. The apparatus of claim **2** in which the sound waves produced by the sound wave generator are equalized.

4. The apparatus of claim **1** further comprising a microphone positioned for receiving sound waves produced by the listener at the second location and focused on the microphone by the dome.

5. The apparatus of claim **1** in which the dome has an apex and a radius of curvature r, wherein the first location is at a distance "O" from the apex, and wherein the second location is at a distance "I" from the apex such that:

$$\frac{1}{O}+\frac{1}{I}=\frac{2}{r}.$$

6. The apparatus of claim **5** in which the sound wave generator has a sound wave generating area of A_o and in which the sound waves are focused in an area A_I, and wherein:

$$\frac{O}{I}=\sqrt{\frac{A_o}{A_I}}.$$

7. The apparatus of claim **5** in which the dome has a central axis, the first location being offset from the central axis a distance h_o and the second location being offset from the central axis a distance h_I and wherein:

$$\frac{O}{I}=\frac{h_o}{h_I}.$$

8. An apparatus for focusing sound waves to a listener comprising:

an acoustically reflective dome having an interior surface for focusing sound waves, the interior surface of the dome including a spherical section having an apex and a constant radius; and

a sound wave generator positioned in a first location with respect to the dome for producing sound waves, the sound waves reflecting off the interior surface of the dome and focusing at a predetermined second location with respect to the dome for listening, where one of the first and second locations is at a distance from the apex that is less than the radius and the other of the first and second locations is at a distance from the apex that is greater than the radius.

9. An apparatus for focusing sound waves to a listener comprising:

an acoustically reflective dome having an interior surface for focusing sound waves, the interior surface of the dome having a constant radius; and

a sound wave generator positioned in a first location with respect to the dome for producing sound waves, the sound waves reflecting off the interior surface of the dome and focusing at a predetermined second location with respect to the dome for listening, whereby the location at which the sound waves are focused can be varied by varying the location at which the sound waves are produced.

10. An apparatus for focusing sound waves to a listener comprising:

an acoustically reflective dome for focusing sound waves, the dome having an interior surface which is spherical in shape with a constant radius; and

a sound wave generator comprising first and second speakers positioned side-by-side in a first location with respect to the dome for producing stereophonic sound waves, the stereophonic sound waves reflecting off the interior surface of the dome and focusing in stereo at a predetermined second location with respect to the dome for listening, whereby the location at which the sound waves are focused can be varied by varying the location at which the sound waves are produced.

11. The apparatus of claim **10** in which the sound waves produced by the sound wave generator are equalized.

12. The apparatus of claim **10** further comprising a microphone positioned for receiving sound waves produced by the listener at the second location and focused on the microphone by the dome.

13. An apparatus for focusing sound waves comprising:

an acoustically reflective dome having an interior surface for focusing sound waves, the interior surface of the dome being spherical in shape with a constant radius;

a sound wave generator positioned in a first location with respect to the dome for producing sound waves, the sound waves reflecting off the interior surface of the dome and focusing at a predetermined second location with respect to the dome for listening, whereby the location at which the sound waves are focused can be varied by varying the location at which the sound waves are produced; and

a microphone positioned in a third predetermined location with respect to the dome for receiving sound waves generated from the second predetermined location with respect to the dome, the generated sound waves reflecting off the interior surface of the dome and focusing on the microphone.

14. A method of focusing sound waves to a listener comprising the steps of:

providing an acoustically reflective dome having an interior surface for focusing sound waves, the interior surface of the dome being spherical in shape with a constant radius;

positioning a sound wave generator for producing sound waves in a first location with respect to the interior surface of the dome; and

reflecting the sound waves produced by the sound wave generator with the interior surface of the dome to focus

the sound waves at a predetermined second location with respect to the dome for listening, whereby the location at which the sound waves are focused can be varied by varying the location at which the sound waves are produced.

15. The method of claim **14** in which the sound wave generator comprises first and second speakers positioned side-by-side for producing stereophonic sound waves.

16. The method of claim **15** further comprising the step of equalizing the sound waves generated by the sound wave generator.

17. The method of claim **14** further comprising positioning a microphone for receiving sound waves produced by the listener at the second location and focused on the microphone by the dome.

18. A method of focusing sound waves to a listener comprising the steps of:

providing an acoustically reflective dome for focusing sound waves, the dome having an interior surface which is spherical in shape with a constant radius;

positioning a sound wave generator for producing stereophonic sound waves in a first location with respect to the interior surface of the dome, the sound wave generator comprising first and second speakers positioned side-by-side; and

reflecting the stereophonic sound waves produced by the sound wave generator with the interior surface of the dome to focus the sound waves at a predetermined second location with respect to the dome for listening, whereby the location at which the sound waves are focused can be varied by varying the location at which the sound waves are produced.

19. The method of claim **18** further comprising the step of equalizing the sound waves generated by the sound wave generator.

20. The method of claim **18** further comprising positioning a microphone for receiving sound waves produced by the listener at the second location and focused on the microphone by the dome.

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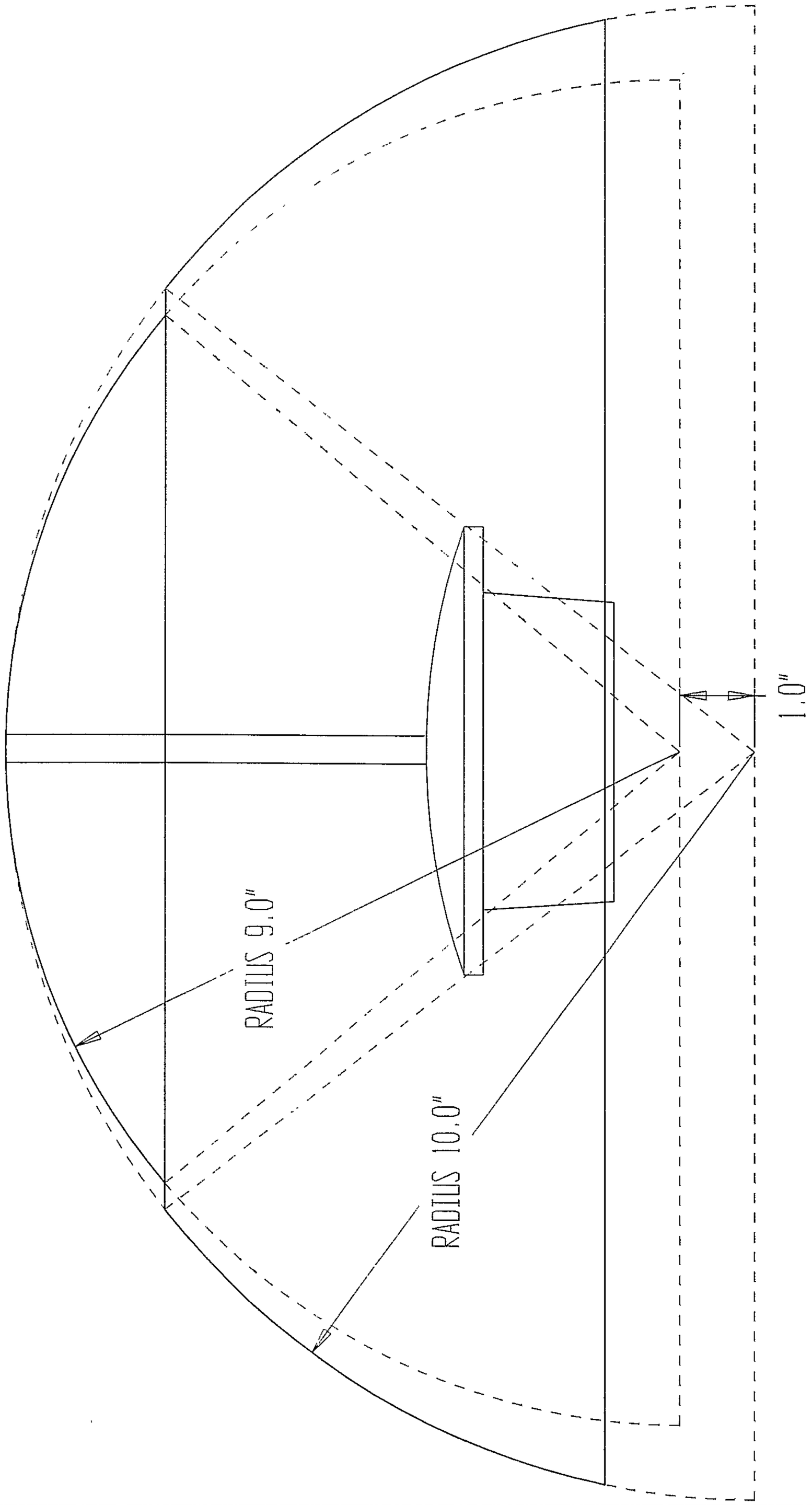

Ex. 2